WSPRPi: Setting up Arduino IDE to program WSPRpi

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Abstract

The WSPRpi is based around a Fubarino Mini which is a PIC32 based development board designed to be compatible with the Arduino IDE. These instructions detail how to set up the Arduino IDE to program the chipKIT (name of the PIC32 Arduino boards) development boards and the one used in the WSPRpi in particular.

I have only tested this on a Windows PC, I believe there should be no difference on Linux / Mac as there are no OS specific commands but I may be wrong. These were written for Arduino IDE 1.8.4, if there are any major changes, I will aim to rewrite these but it may take a while for me to get around to it.

- Install Arduino IDE (if you don't have it already):

  Install latest version of IDE from https://www.arduino.cc/en/Main/Software.

- Open Preferences Menu: File, Preferences or Ctrl-Comma

- Add Chipkit GitHub Repo to the Board Managers List:

  Insert the following text into the Additional Board Manager URLs section: "https://github.com/chipKIT32/chipKIT-core/raw/master/package_chipkit_index.json" If there is already something there separate the URLs with a comma.
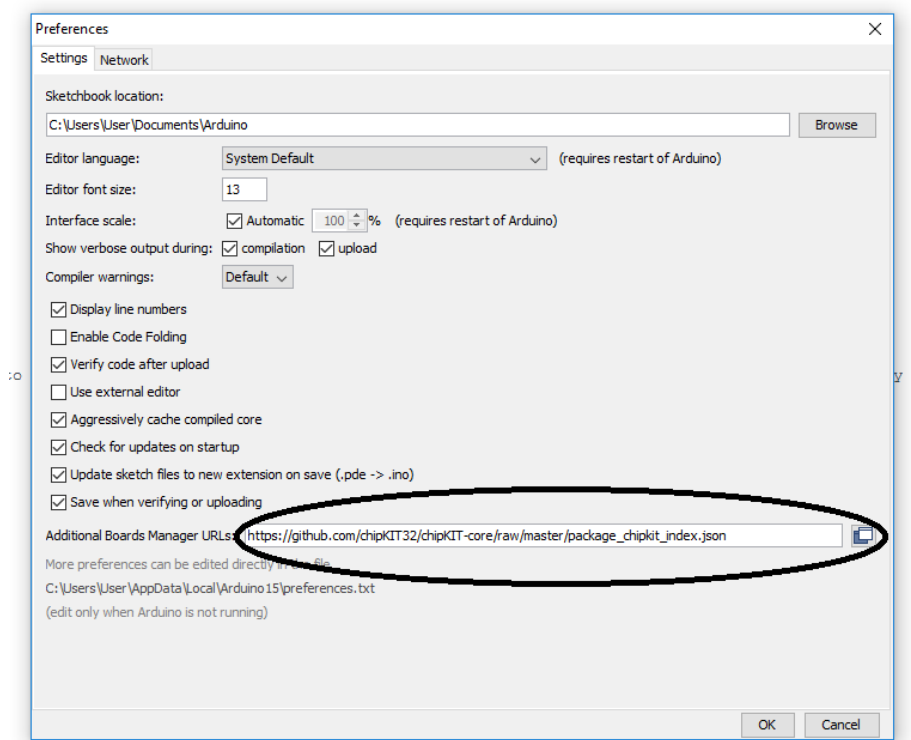

Figure 1: Location to insert the URL

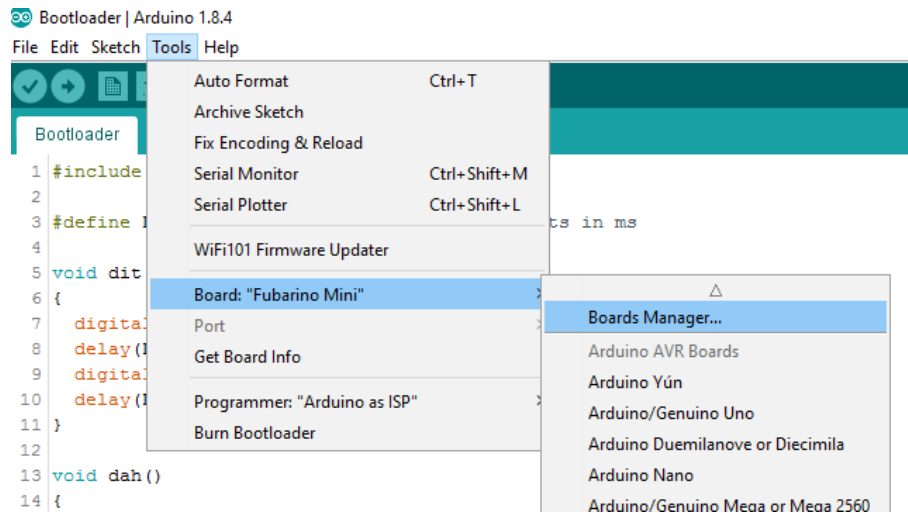- Open the Boards Manager: Tools, Board: "may be board name here", Boards Manager

Figure 2: Opening Board Manager

- Install the Chipkit Board Package

  I use the filter to search for "chipkit". The one you want is by chipKIT Community. Install the latest version.
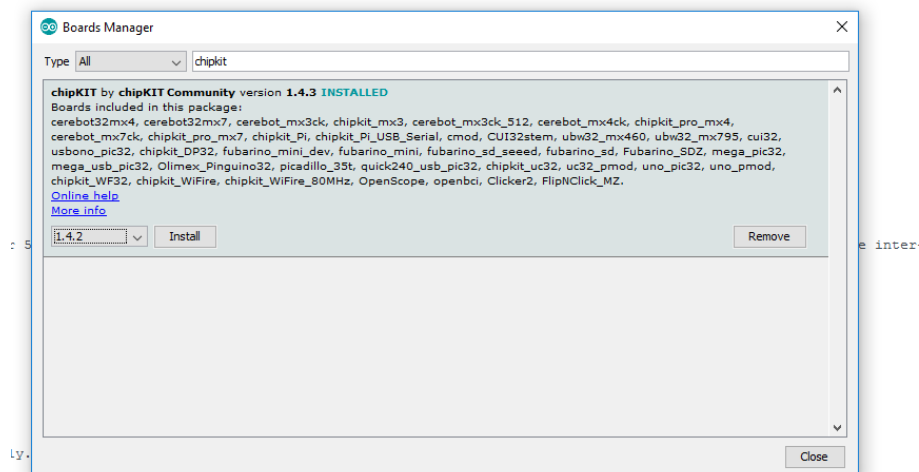

Figure 3: Installer for ChipKIT boards, N.B. mine shows installed and won't let me select the latest version in the version box in the bottom left corner as I've already got 1.4.3 installed

- Check you have the Chipkit boards available

  There should now be a chipKIT section in the Boards list. (Tools, Board: "may be board name here") The one for WSPRpi is "Fubarino Mini", not the "Fubarino Mini (dev)" which is slightly different, ensure this is selected and the Board option in the Tools menu now says Board: "Fubarino Mini".
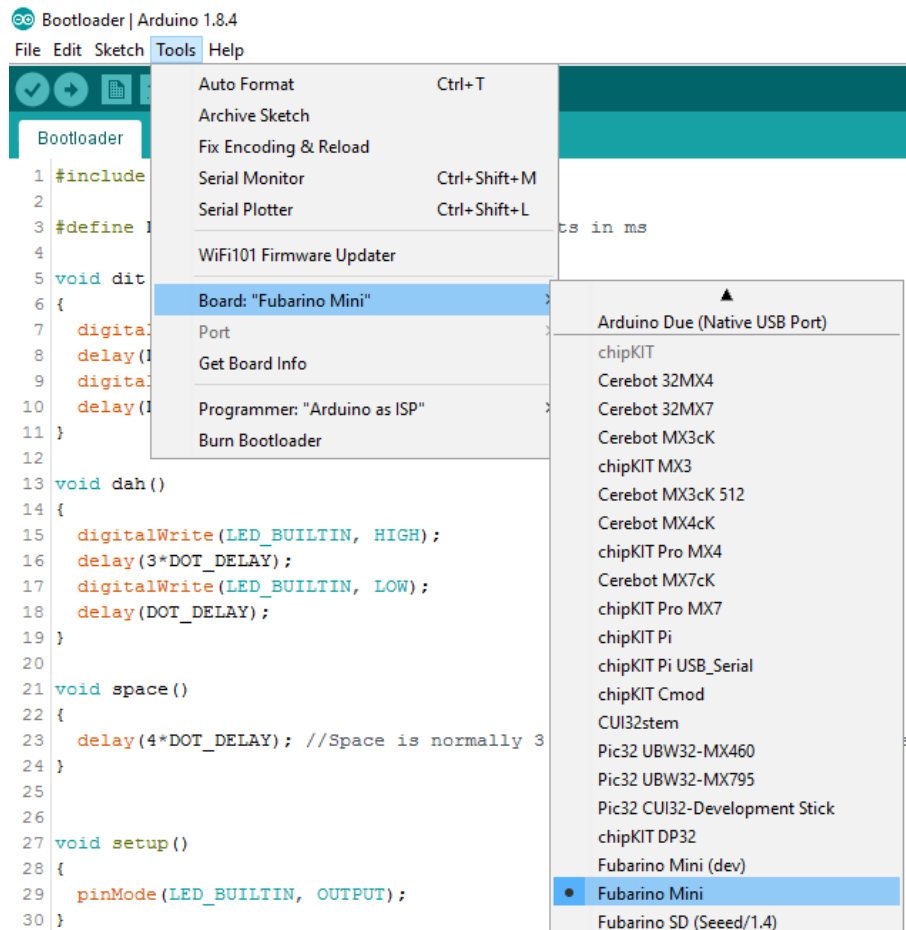
Figure 4: Option for WSPRpi is highlighted

- Test WSPRpi code now compiles

  All of the source code for WSPRpi is in https://github.com/WSPRpi/PIC32-Firmware. Download this (either using git or just download the zip file) and check the WSPR_TCVR.ino compiles. Note it doesn't compile for Arduino boards so if compilation succeeds, you have installed the board correctly.

- Test program WSPRpi

  This assumes you have installed the USB bootloader, not the UART one (see "Installing Bootloader" instructions. If the UART bootloader is installed, the PIC32 cannot be programmed over the USB port.

  Hold the "Menu" button down on the front panel and tap the "Reset" button on the MCU board. The TX LED should blink rapidly. Now plug a Mini USB cable into the USB port and the WSPRpi should show up with a Device Descriptor of "chipKIT USB Serial (Stk500v2 compatible)" Note that it will note identify at all if the UART bootloader is installed. It should show up with the same descriptor if WSPRpi firmware is installed but you won't be able to reprogram it.